

VIDRO AUTOMOTIVO

Two Basic Types of Automotive Glass

Automotive glass plays an important role in protecting vehicle occupants.

Basically, automotive glass can be classified into two main types - laminated glass and tempered glass and AGC Automotive has developed two corresponding brands - namely LAMISAFE and TEMPERLITE.

Laminated Glass

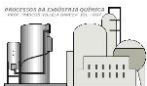
Laminated glass is a kind of safety glass used mainly for windshields. As it consists of two layers of glass laminated together by a film, in the event of breakage, the glass pieces tend to adhere to the interlayer. In the event of an accident or a stone or other object striking the glass, the likelihood of penetration into the vehicle cabin is lower.

[For more information](#)

Tempered Glass

Tempered glass is mainly used for the rear and side windows of vehicles. It is very strong and has the unique fracture characteristic of shattering instantly in the event of breakage. If broken, it fractures instantaneously into small pieces with no sharp edges, providing a safer environment in case of accidents.

[For more information](#)



VIDRO AUTOMOTIVO

VIDRO TEMPERADO

3 to 5 times stronger than ordinary glass pane

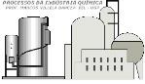
Tempered glass is produced by heating glass to near melting point (approx. 650°C) and rapidly cooling the surface uniformly with air. Glass produced by this special process has enhanced strength and is used mainly for the rear and side windows of vehicles. It has the characteristic of fracturing instantly if broken.



<Broken pieces of TEMPERLITE>



<Shards of ordinary flat glass>



VIDRO AUTOMOTIVO

VIDRO TEMPERADO

Performance of Tempered Glass

1 Outstanding Impact Resistance

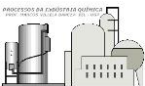
Tempered glass is created by heating glass to near melting point and generating compressive stress on the surface of the glass through rapid cooling with air. When the glass is in danger of being broken by tensile force, the force is counteracted by the surface compressive stress. Tempered glass is three to five times stronger than ordinary glass pane of the same thickness.

2 Safe, Small Broken Pieces

Tempered glass is strong. But if subjected to an external force that exceeds the limit of the compressive stress, it will fracture. Unlike ordinary glass, however, if broken, it fragments into small pieces. As there are no sharp, knife-like shards, it is unlikely to cause serious injury. That is why tempered glass is recognized as safety glass.

Glass Bending & Forming Technology

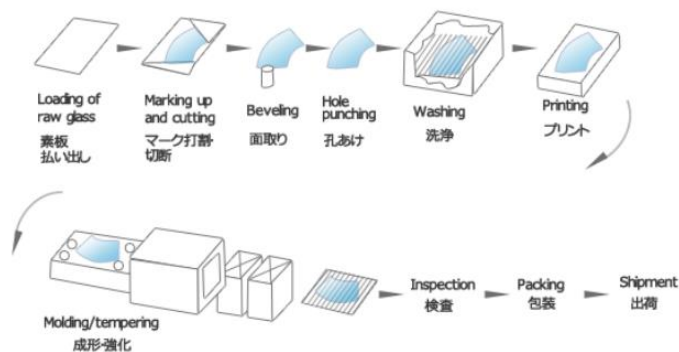
At 670°C, glass enters the viscoelastic state and can be bent. However wrinkles will also be formed at the same time. Also, if the glass is bent too sharply, the view through the glass will be distorted. Using various types of simulation technologies, AGC Automotive has achieved a high degree of forming freedom and accuracy with TEMPERLITE.

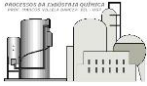


VIDRO AUTOMOTIVO

VIDRO TEMPERADO

Manufacturing Process of Tempered Glass





VIDRO AUTOMOTIVO

VIDRO LAMINADO

Outstanding Penetration Resistance

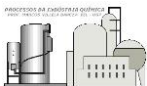


<Structural section of LAMISAFE>



<Condition of cracked laminated glass>

Laminated glass is a kind of safety glass used mainly for windshields. As it consists of two layers of glass laminated together by a film, in the event of breakage, the glass pieces tend to adhere to the interlayer. In the event of an accident or a stone or other object striking the glass, the likelihood of penetration into the vehicle cabin is lower.

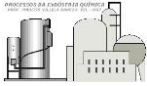


VIDRO AUTOMOTIVO

VIDRO LAMINADO

Performance of Laminated Glass

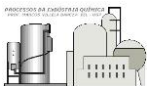
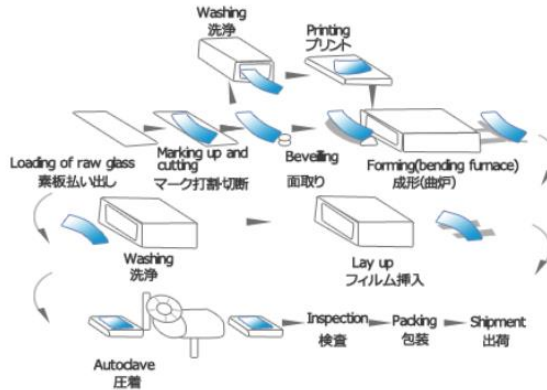
- 1 Assurance of Clear Visibility
The middle layer of the laminated glass is made of polyvinylbutyral (PVB). This interlayer is colorless, transparent, highly weather-proof and is virtually unaffected by UV rays. LAMISAFE offers the same degree of clear visibility as ordinary glass pane.
- 2 Penetration Resistance
In the event of breakage of the laminated glass surface, the tough PVB interlayer provides huge resistance to penetration by objects striking the glass.
- 3 Non-Scattering Broken Pieces
The two layers of laminated glass are bonded together by a tough, pliable PVB interlayer. Should glass breakage occur, the broken pieces tend to remain adhered to the interlayer. This avoids flying of big pieces of broken glass and at the same time preserves visibility for driving in other parts of the same window.
- 4 Anti-Theft Function
Laminated glass can only be cut by incision from both sides. Should a car thief attempt to break into the car by breaking the glass, the tough PVB interlayer will act as an effective deterrent, hampering intrusion.



VIDRO AUTOMOTIVO

VIDRO LAMINADO

Manufacturing Process of Laminated Glass



VIDRO AUTOMOTIVO

